

REMARKS

Reconsideration and allowance of the subject patent application are respectfully requested.

Claim 32 has been re-written as a dependent claim depending from claim 26. Applicant submits that no new issues are raised by this amendment. Consequently, entry is believed to be appropriate and is respectfully requested.

Applicant respectfully traverses the rejection of claims 26-30, 32, 34 and 61 under 35 U.S.C. Section 102(e) as allegedly being anticipated by Tayebati et al. (U.S. Patent No. 6,438,149).

In the remarks accompanying the prior response (which remarks are incorporated herein), Applicant noted, among other things, that Tayebati et al. at least fails to disclose the feature of independent claims 26 and 61 that *the intrinsic stress of the membrane is an intrinsic tensile stress adapted to be compensated by a compressive stress applied thereto such that the resultant stress in the membrane is substantially zero or sufficiently low to permit electrostatic displacement over distances for tuning in the infrared band.*

In reply, the 12/31/2009 office action argues that Tayebati et al. discloses the above-italicized feature because the resultant stress in the Distributed Bragg Reflector (DBR) in Tayebati after fabrication must allegedly be substantially zero.

In Tayebati et al., membrane 37 and DBR 12 are different components and made of different materials. For example, membrane 37 is made of silicon nitride or a thin layer of a metal other than aluminum (col. 12, lines 25 to 29) and DBR 12 is made of alternating layers of quarter-wavelength thick deposited dielectric films (col. 12, lines 57 to 62). As shown in Figure 4G of Tayebati et al., membrane 37 acts as a support for the top DBR 12. See, e.g., col. 12, lines 21 to 24.

Consequently, arguing that the resultant stress in the DBR of Tayebati et al. after fabrication is substantially zero does not support the allegation that the resultant stress in the membrane is substantially zero as recited in claims 26 and 61.

For at least this reason, Applicant respectfully submits that Tayebati et al. does not anticipate claim 26 or 61, or any claims depending therefrom, and requests that this rejection be withdrawn.

Moreover, with reference to the figures of Tayebati et al., one of ordinary skill would understand that membrane 37 is caused to form a curved configuration due to the stress introduced to membrane 37. That is, membrane 37 in Tayebati et al. is stressed to form a curved configuration as clearly shown in the figures. Such curvature can be controlled by modifying the stress within the DBR. See, e.g., col. 6, line 60 to col. 7, line 25.

Therefore, in Tayebati et al., membrane 37 achieves a curved configuration upon the removal of the sacrificial layer 30. See, e.g., col. 7, lines 22 to 25. In contrast, as described in the subject application by way of example and without limitation, illustrative membrane 57 achieves a flat configuration upon removal of sacrificial layer 55 as a result of the resultant stress in the membrane being substantially zero or sufficiently low. See, e.g., page 19, lines 22 to 31 and Figures 7A to 7I of the specification. Accordingly, Applicant respectfully submits that Tayebati et al. fails to disclose that the resultant stress in the membrane is substantially zero or sufficiently low to permit electrostatic displacement as recited in claims 26 and 61.

For this additional reason, Applicant respectfully submits that Tayebati et al. does not anticipate claim 26 or 61, or any claims depending therefrom, and requests that this rejection be withdrawn.

Lipson et al. (U.S. Patent No. 6,567,209) and Carey et al. (U.S. Patent No. 6,277,696) are applied in connection with dependent claims 31 and 33, respectively. Among other things, these references do not remedy the deficiencies of Tayebati et al. noted above with respect to claims 26 and 32, from which claims 31 and 33 depend, respectively. For at least these reasons, claims 31 and 33 patentably distinguish over the proposed combinations of references.

With respect to claim 35, the office action simply cites case law in support of the obviousness rejection. Applicant respectfully submits that the cited case law is inapposite here. Moreover, even assuming some legally sufficient basis could be identified for having the reflective layers of Tayebati et al. function as the electrodes, Tayebati et al. would still be deficient with respect to claim 26, from which claim 35 depends.

Claims 62 to 63 were rejected under 35 U.S.C. Section 103(a) as allegedly being obvious over Tayebati et al. in view of Sirbu (U.S. Patent Publication No. 2002/0131458 A1). The office action acknowledges that Tayebati et al. fails to disclose a membrane that is substantially flat when suspended and not deformed due to electrostatic forces, but purports to remedy this deficiency by referring to Sirbu, which is alleged to disclose a DBR stack 12a which is substantially flat.

Applicant respectfully traverses this rejection and submits that one of ordinary skill in the art would not have modified the top DBR 12 disclosed in Tayebati et al. with the flat DBR disclosed in Sirbu without using impermissible hindsight.

As is well established (see, e.g., MPEP 2143.01 - VI), the proposed modification cannot change the principle of operation of a reference. Specifically, if the proposed modification or combination of prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).

The principle of operation of the tunable device as disclosed by Tayebati et al. is the confocal design, that is the curvature of DBR 12. Tayebati et al. specifically states that “[o]ne innovation of this design is the fact the curvature of one of the mirrors creates a micro-resonator that can sustain Hermite Gaussian modes” (col. 6, lines 17 to 19). See also col. 6, lines 10 to 59. Further, Tayebati et al. teaches that his purported invention is distinct from competing devices in that “the confocal design of the VCSEL structure allows single spatial modes, lower threshold and efficient coupling into a single mode fiber” (col. 9, lines 11 to 13). See also col. 9, lines 11 to 13).

Therefore, Applicant submits that modifying the top DBR 12 disclosed in Tayebati et al. with a flat DBR would go strongly against the fundamental teaching of Tayebati et al., as well as being a change in the basic principle under which the Tayebati et al. device was designed to operate. Moreover, this modification would render Tayebati et al.’s invention unsatisfactory for its intended purpose. See, e.g., MPEP 2143.01 - V, *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

FARAONE et al.

Application No. 10/507,015

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Based on the above, reconsideration and favorable office action are respectfully requested.

Respectfully submitted,
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